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Fear, boldness and caution: parent effects on how children manage chronic pain

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Prof Frank Keefe

Editor, *PAIN*

Dear Prof Keefe,

Re: Invited Commentary on Birnie et al.

Many thanks for the invitation to submit a commentary on this interesting paper. We hope to have drawn out the paper's novel and positive aspects, as well as situating it more broadly in the current literature.

We look forward to hearing your view on this submission.

Yours sincerely,

Jeremy Gauntlett-Gilbert

Abbie Jordan

Fear, boldness and caution: parent effects on how children manage chronic pain

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It is well-established that parents affect how children with chronic pain manage their pain and associated disability, yet exactly how that influence happens is not fully understood. There is substantial evidence for 'intergenerational transmission' of pain and pain related disability(1), with mothers with chronic pain having children at risk of poorer outcomes across a number of domains(2). Studies have also shown that children of parents with a particular type of pain are more likely to develop similar pain, or other pain diagnoses(3).

However, not all children with chronic pain have parents who also experience chronic pain, and it remains important to establish the exact mechanisms of parental influence. The literature on intergenerational transmission has examined a wide range of variables that may pass risk from mother to child(1). However, a number of these mechanisms, such as maternal genetics, prenatal and perinatal influences, are not manipulable in the present moment and consequently, are unable to inform pain treatment. Thus, researchers have worked to establish the role of a number of key parent behavioral variables as potential treatment targets, for example, parent pain catastrophizing(4), pain acceptance (5), and protectiveness(6). However, results have not always been consistent; for example, some studies have shown a role for protectiveness in affecting child pain outcomes(7), whilst other studies have not(8). Birnie and colleagues, in this volume, approach this problem by assuming that the influence of such parent variables may vary in different contexts(9); they may be driven by poor parent health and further moderated by parent pain status and child age. In particular, they argue that research focus should shift from examining parent pain to all forms of parent ill health, which is a novel aspect of this study.

In their study, Birnie et al. use a conceptually clear clinical model, the Interpersonal Fear-Avoidance Model (IFAM)(7) to examine a centrally important clinical outcome, pain impact in the child. The IFAM suggests that important sources of child disability – pain catastrophizing and avoidance in the child, for example – are affected by the parent's attitude and reaction to the child's pain. Where a parent is catastrophic, hypervigilant and overprotective, their child will likely increase their own anxious reactions to pain, to their detriment.

This interaction between parents and children is evidently complex and multifactorial, often examined with structural equation modelling (SEM). The sheer number of potential influences can lead investigators to create elaborate models. In contrast, Birnie et al. have stayed close to a theoretical model, the IFAM, and then used a clear and constrained model. There are relatively few variables and paths, and each piece yields information; multiple group comparisons are used rather

than burdening the model with extra variables. Their large dataset, with highly complete data drawn from an adaptive computerised questionnaire system, make this study particularly valuable.

Birnie et al.'s results add support to the IFAM by showing that parent catastrophizing seems to drive child catastrophizing, which in turn worsens pain impact. Parents' own catastrophising seems to be worse when they themselves report poorer health. The authors summarise their results as showing that parental health has an indirect effect on child pain impact that is mediated by parent catastrophizing. However, despite the authors' interest in parental health, the results also to point to the centrality of behavioural and psychological factors. Specifically, parent catastrophizing seems to the key mechanism of negative effects and there is nothing about a parent simply being less healthy, for example, that leads to them acting more protectively towards their child (the latter again being related to parent catastrophizing).

The analysis of child age and parent pain status, as moderators of IFAM mechanisms, yields interesting results. Parent protectiveness was found to be more unhelpful in adolescents, compared to younger children, perhaps due to its limiting influence on adolescent autonomy. However, the actual size of the effects across age was similar, and small. Looking at parent pain status, the negative effects of parent ill health and child catastrophizing were relevant in both groups, but surprisingly stronger where parents did not report pain. This raises the interesting possibility that pain catastrophizing may be more potent, for the parent and the child, when pain is more unfamiliar in the family.

The results of Birnie and colleagues' study emphasise that even the most powerful and familiar parent variables, such as catastrophizing and protectiveness, may have quite different influences in different family and developmental contexts. Attention to such moderators of parent effects may increase replicability of results in this literature. Consequently, it is critical that future studies of parent influence explore child age as a moderator variable. It may also be that the severity and nature of the child's condition will change parent influence. Parent effects are sometimes studied in diverse and contrasting pediatric pain populations. For example, Cordts et al. recently studied parents of children with an average pain of 4.1/10, where 63% were experiencing headache(8); in contrast, Kemani et al.'s population reported much higher pain at 7.3/10 with <15% with headache(10). It is not clear that such populations are comparable or whether we would predict identical parent effects in both. Inconsistent reporting of variables that characterise the severity or duration of a population's problems can also make it hard to compare research findings. For example, Birnie et al. report pain duration but not pain intensity for their participants, whereas Cordts et al. report the opposite. Future investigators should ideally include details of the child's

pain intensity, duration, and functional impact. Such details, along with moderator analyses of child age and parent characteristics, may help to explain inconsistencies in previous research results.

Conflict of interest statement: The authors have no conflicts of interest to declare.

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